NATIONAL TRANSPORTATION SAFETY BOARD
OFFICE OF SURFACE TRANSPORTATION SAFETY
MARINE DIVISION
TECHNICAL BRANCH

April 19, 1996

VESSEL FACTORS FACTUAL REPORT

A. ACCIDENT

Vessel No.1:	U.S Registered, uninspected tugboat M.V. SCANDIA
Vessel No.2:	U.S.Registered, and inspected oil tankbarge, NORTH CAPE
Location:	About 4.5 miles southwest of Point Judith, Rhode Island, in Block Island Sound (Latitude 41.18 N, Longitude 71.32 W)
Date:	January 19, 1996
Time:	About 1320 - Local time at fire discovery.
Type:	Engineroom Fire, and subsequent Grounding of tug and barge
NTSB No:	DCA-96-MM-014

B. INVESTIGATOR:

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C. PARTY REPRESENTATIVES TO THE INVESTIGATION:

Eklof Marine, Inc, was the operator of the SCANDIA.
The owner of the tug was Thor Towing Corp, c/o Eklof Marine Corp
3245 Richmond Terrace, P.O. Box 030316, Staten Island, NY 10303

U. S. Coast Guard
2100 Second Street, S.E.
Washington, D.C. 20593

D. INFORMATION SOURCES:

On scene survey of vessel
Crew Testimony
Builder's Plans
U.S.C.G. Certificate of Documentation
American Bureau of Shipping Surveys
Company Maintenance and Inspection History

E. SYNOPSIS:

The tug SCANDIA and the tankbarge NORTH CAPE, departed IMTT Terminal at Bayonne, NJ about 1745 on January 17, 1996, in route to Providence, Rhode Island. The tankbarge was loaded with 4 million gallons of No 2 heating oil. The voyage toward Providence was routine and uneventful.

About 1320, on January 19, the SCANDIA and NORTH CAPE were about 4.5 miles southwest of Pt. Judith, Rhode Island. In the galley, the dayman discovers smoke coming through the space at the top of the closed fidley steel door (between the fidley and the galley). About the same time, the bridge fire alarm siren activated. The chief mate pushed the fire alarm selector button[1], and the monitor screen indicated a "fire in upper engineroom." The chief mate sounded the general alarm for fire.

The chief engineer ran into the galley and looked through the galley/fidley door. He said the fire's location was at the fidley deck grating, aft on the port side. Smoke from the fidley was filling the galley and other interior spaces on the SCANDIA. About 1357 the captain broadcast a MayDay. The Coast Guard responded, sending a 44 foot MLB to rescue the tug's crew. The fire engulfed the tug, and the six tug crewmen went to the peak of the bow, donned their exposure suits, and 45 minutes later, abandoned the vessel. All were rescued by the Coast Guard. There were no deaths or injuries.

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[1] When an alarm sounds, one must push the corresponding illuminated button to acknowledge the alarm. When the alarm is acknowledged, the monitor screen displays data for that system. The system sensor selector panel buttons are a part of the SCANDIA's vessel monitoring system. Pushing a button, for example the starboard generator, results in a monitor display indicating the generators output voltage, amperes, and the drive diesel's rpm and exhaust temperature.

F. Vessel Information

I. General Description - Vessel No. 1

The SCANDIA, Official Number 517785, was a conventional coastal/harbor tug boat constructed of all welded steel in St. Louis, Missouri in 1968. The tug was 120 feet long overall (111.5 feet long between perpendiculars), 30 feet wide, and 10.5 feet deep. The 198 certificated gross tonnage of the SCANDIA, placed the tug in the category of Uninspected Towing Vessels (UTV), i.e., motor vessel (not seagoing) of less than 300 gross tons, and as such, is not inspected by state or federal regulatory authorities.

The SCANDIA was registered with the U.S. Coast Guard, which issued a Certificate of Documentation (COD) for Coastwise (U.S.), Great Lakes, and Registry (foreign) operations, to the 198 gross ton SCANDIA on August 6, 1990. The COD states Thor Towing Corp., as owner of the vessel. Eklof Marine of Staten Island, New York, was the operator of the SCANDIA.

U.S. regulations concerning UTV'S are found in 46 CFR Subchapter C, Uninspected Vessels, parts 24-General Provisions, 25-Requirements, 26-Operations, (27 is Reserved), and 28-commercial fishing vessels. Subchapter C sets the uniform minimum requirements for uninspected commercial vessels, which includes motorboats[2], motor vessels[3], commercial fishing vessels, factory fishing vessels, vessels with more than 16 individuals (not passengers) on board, and passenger vessels carrying less than 6 persons, and over 6 but less than 49 persons.

Firefighting requirements for an Uninspected Towing Vessel, like the SCANDIA, are found in part 25.30-20 (b)1, for Motor Vessels over 100 and less than 500 gross tons, the fire extinguishing equipment required is a minimum of three B-II 15 pound hand-portable CO_2 fire extinguishers. With one additional B-II for each 1,000 hp or fraction thereof, not required to exceed 6.

Construction -- The SCANDIA was constructed to meet the requirements of the American Bureau of Shipping's (ABS) Rules for Building and Classing Steel Vessels. As an ABS classed

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[2] Uninspected Vessels -- 46 cfr Subchapter C, Motor boats Class A - less than 16 feet in length, Class 1- over 16 but less than 26 feet, Class 2- over 26 but less than 40 feet, Class 3- over 40 but less than 65 feet

[3] Motor Vessels-any vessel over 65 feet long, propelled by machinery other than steam. Motor Vessels over 300 gross tons and, most importantly, seagoing, fall into the category of Inspected motor vessels. There are motor vessels over 2,000 gross tons, that are not inspected because they are not seagoing.

vessel, the SCANDIA was subject to annual hull, machinery and electrical surveys[4], continuous machinery and electrical surveys, and drydocking for underwater (lower) hull examination at 24-30 month intervals. A Special Survey (detailed) of hull and machinery was conducted every five years.

ABS Surveys -- NTSB marine investigators reviewed the ABS records concerning the M.V. SCANDIA for the period from January 1992, to April 1995, which was the last survey report prior to the January 1996 engineroom fire. The ABS SCANDIA survey records included completed annual hull, machinery and electrical examinations, Load Line Surveys, a Special Survey (including steel thickness gaugings), and a drydocking (underwater hull) survey. The SCANDIA has been surveyed on nine different occasions during the three year period from January 1992 to March 1995. No outstanding discrepancies were found, and the overall condition of the SCANDIA, was found to be satisfactory[5] to the ABS surveyors.

Vessel History -- The SCANDIA, was the HELEN McALLISTER from it date of construction in 1968 until 1983, when it was involved in an accident, and subsequent sinking. Eklof Marine bought the tug, as is, from the McAllister Towing Company, and rebuilt it to ABS class acceptance, and renamed it SCANDIA.. The SCANDIA is sister to Eklof Marine's THOR, which is the ex MARJORIE McALLISTER.

The SCANDIA was involved in a reportable[6] engineroom fire on March 5, 1995. The tug's hot-water heating system, which was located aft in the lower engineroom, was involved in a fire. A fuel oil pipe line to the water heater burner failed and a fuel oil fire ensued. The fire was extinguished by crew members and a shore side firefighting company. All necessary repairs were made to the hot-water heating system, and other areas damaged in the fire. The system was examined and found satisfactory by the ABS.

Under Eklof management, the SCANDIA was operated by a six person crew, that consisted of a captain, chief mate, chief engineer, two tankermen, and one dayman. The three officers possessed valid licenses and the three crewmen possessed valid documents issued by the

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[4] Surveys are visual and operational examination of mechanical and electrical equipment and systems, and the visual and Ultra Sonic examination of the metal hull plating and structure.

[5] In ABS survey reports, a vessel condition (machinery, electrical, material) is noted as 'Satisfactory or UnSatisfactory'. This comment is used to indicate whether the equipment met or failed to meet the operational or material requirements in an ABS survey.

[6] Reportable marine accident as found in 46 CFR 4.05-1: Accidental or intentional grounding, regardless of level of damage ($), loss of main propulsion or primary steering, or any associated component or control system, an occurrence materially and adversely affecting the vessel's seaworthiness or fitness for service or route, included, but not limited to fire, grounding, failure or damage to fixed fire extinguishing systems, lifesaving equipment, auxiliary power generating equipment, or bilge pumping systems. Loss of life, or injury requiring medical treatment beyond first air. An occurrence not meeting any of the above criteria, but resulting in damage to property in excess of $25,000.

U.S. Coast Guard. The tug's usual work involved the movement of single-hull tankbarges along the U.S. eastern seaboard, Gulf, and various associated harbor areas.

II. General Description - Vessel No. 2

The NORTH CAPE, hull No. 255, was built in 1978 by Zigler Shipyards in Jennings, Louisiana. The U.S. registered (Official No. D591040), 5506 gross ton, oil tankbarge NORTH CAPE , was constructed of all welded steel at Jennings, Louisiana, in 1978. The NORTH CAPE was 340 feet long, 70 feet wide, and 27.8 feet deep. Maximum cargo carrying capacity is rated at 4.2 million gallons (100,000 barrels).

On December 8, 1995, the U.S. Coast Guard issued an Annual Certificate of Inspection (COI) for the tankbarge NORTH CAPE. The tankbarge was certified for Ocean routes, and the carriage of grade A and lower, Noxious Liquid Substances, (methyltetra butyl ether, and pentane, toluene, and xylene, as an oil like substance.

The NORTH CAPE was a conventional tankbarge, inspected and certificated by the U.S. Coast Guard for unmanned operation only, on Oceans, and coastwise unrestricted. The tankbarge was owned by Odin Marine Corp, and operated by Eklof Marine, both of Staten Island, New York.

The unmanned tankbarge NORTH CAPE was fitted with three diesel-driven cargo pumps, and an associated cargo discharge valve and piping system. According to the COI, a chief engineer was required during operation of the barge's diesel-driven cargo pumps. The fourteen-tank cargo block was located between a bow rake and stern void collision compartments. A diesel-driven anchor windlass and 3 ton anchor, rigged to an 'A' frame anchor sled, were installed at the NORTH CAPE bow.

G. Detailed Vessel Information

1. Engineering and Structural Information: Vessel No. 1.

The SCANDIA was a typical coastal/harbor tug boat with a three level welded steel superstructure on and above the main deck level. On the tug's main deck, aft of the superstructure, was a towing wench and capstan. The towing wench was chain driven by a GM-671 diesel engine in the lower engineroom. Forward of the main deck superstructure, was the tug's bow.

. Below the Main Deck

Located below the main deck, from aft to forward, was the steering compartment, machinery space (lower engineroom), the dry stores compartment, and the forepeak tank. The

steering machinery was installed in a water-tight compartment forward of the afterpeak ballast tank, and aft of and adjacent to the lower engineroom's aft transverse bulkhead.

The lower engineroom contained the 3,600 horsepower (exhaust-gas turbo-charged) 20 cylinder (GM-645) propulsion diesel engine. Two diesel driven (6 cylinder GM-671) powered the tugs two alternating current generators, and one (6 cylinder GM-671)diesel drive was connected, through chain link transmission, to the aft deck towing wench. One 2 cylinder (GM-271) diesel driven emergency generator. An oil fired boiler (heating/hot water) was located in the aft starboard area of the lower engineroom.

1. The propulsion diesel engine was aligned longitudinally and installed on the centerline of the tug boat. The two diesel driven generators were installed longitudinally and located below the port and starboard stairs leading to the fidley, and outboard of the propulsion engine.

2. The towing wench diesel engine was installed transversely, aft of the propulsion diesel engine. The oil fired hot-water heating system was located aft of the towing winch engine, in the lower engineroom's starboard side, and just forward of the steering gear compartment's transverse bulkhead.

Exhaust pipe lines for each diesel engine, ran upward from the lower engineroom, through the fidley, and into the exhaust stack casing. The exhaust lines for each generator extended vertically from each engine exhaust manifold upward to the fidley overhead, and elbowed 90° toward the center of the fidley, where it turned upward 90° into the exhaust stack casing.

1. The propulsion engine's exhaust manifold pipe line was installed horizontally about 8 inches below the fidley deck grating, and ran aft down the center line of the engine, to the turbo-charger. At the turbo-charger outlet, the exhaust pipe elbowed upward and forward at 45° through the deck grating and fidley , into the exhaust stack casing.
2. The exhaust pipe lines, for the one 20 cylinder and the three 6 cylinder diesel engines, were covered with sectional (overlapping) high temperature thermal insulation blankets. The temperature of the engine exhaust piping beneath the insulation blankets was about 950°f.

Combustion air was supplied to the propulsion diesel engine by the turbo-charger. An open 18 inch diameter steel pipe extended vertically downward from the air-intake compartment, aft in the exhaust stack casing, down through the fidley into the lower engineroom, and connected to a sheet metal plenum aft of the main engine. The plenum outlet was connected horizontally, through a rubber vibration pipe joint, to the air intake side of the diesel engine's turbo-charger. The remaining diesel engines, for the generators and towing winch, drew their combustion air directly from the ambient atmospheric air in the engineroom.

Fire Pumps

A two stage, variable discharge, fire pump was located in the lower engineroom below the stairs, forward of the port generator diesel drive engine. The ballast pump was driven through a PTO from the port generator diesel engine. To operate the ballast pump, a crewmember must go into the lower engineroom and engage the PTO for the ballast pump. Here too, the port generator diesel engine must be running. When operated, the fire pump would provide pressurized sea water to the firemain piping system.

The fire pump's outlet, inlet, and seachest valves are normally closed. A crew member must go down into the lower engineroom to open the valves to the fire pump, and thereby provide pressurized sea water to the firemain piping system. Firemain hydrants and 1.5 inch diameter fire hose were installed in various locations around and in the tug boat.

The SCANDIA's single stage, variable discharge ballast pump was located in the lower engineroom below the stairs, forward of the starboard generator's diesel drive engine. The ballast pump was driven through a power-take-off (PTO) from the starboard generator diesel engine. To operate the ballast pump, a crewmember must go down into the lower engineroom to engage the PTO for the pump. And, the starboard generator diesel engine must be running.

The ballast pump's outlet, inlet, and seachest valves are normally closed. A crewmember must go down into the lower engineroom to open the valves to the pump. And through the ballast valve manifold, the ballast pump discharge can directed to the firemain piping system, thereby provide pressurized sea water to the tug's fire hydrants.

In addition to the machinery, there were associated fuel oil, lube oil, and hydraulic oil tanks, piping, and electric motor driven pumps. Fuel oil storage, settling, and day tanks were located on both sides, and below the lower engineroom.

1. A remote control to the port and starboard fuel oil day-tanks supply (outlet) valves was located out side the fidley's aft watertight dutch-door, mounted on the port side longitudinal bulkhead. Activating the control pneumatically closed both the port and starboard fuel oil day-tank supply valves simultaneously.

2. Electric control switches, for the port and starboard ventilation supply fans and the ventilation exhaust fan, were mounted on the port side longitudinal bulkhead out side the fidley's aft watertight dutch-door, adjacent to the pneumatic fuel oil day-tank valve control.

3. Electric control switches, for the port and starboard fuel oil pumps were mounted on the port side longitudinal bulkhead out side the fidley's aft watertight dutch-door, directly below the ventilation fan control switches.

4. Installed in and flush with the main deck, just aft of the location of the control

switches (day-tanks/ventilation/fuel pumps), were four valve stems connected to reach rods for the fuel oil storage and transfer tanks. Using a 'T' handle, a crew member can turn the stem and close the fuel tank valves.

However, there are no requirements for remote controls to fuel oil pumps, ventilation fans, fire pumps, for uninspected towing vessels.

The SCANDIA's dry stores compartment was located at the bottom of a stairwell leading down from the main deck athwartship passageway forward of the galley/dining area. The compartment contained cleaning supplies, engine dry stores (filters, etc.), canned food and other items. The SCANDIA's forepeak ballast tank was located in the bow, below the main deck and forward of the dry-stores compartment.

II . Above the Main Deck / Main Deck Superstructure

At the main deck level the superstructure contained, from aft to forward; the fidley (upper engineroom), a combination galley and mess room, and accommodations for the chief engineer, two tankermen, and the dayman. The second level (stack deck) contained accommodations for the captain, and the chief mate, and a forward compartment which contained the emergency battery-power system, gyroscope, and other electrical devices. The third level (wheel house), contained the operator's helm, which was fitted with controls and instrumentation for propulsion, navigation, steering, and communication.

1. There were four water-tight doors leading from the main deck superstructure to the main deck. Two water-tight dutch-doors opened from the fidley, one to the main deck aft and the other to the port side main deck. A third water-tight dutch-door opened from the galley/dining area onto the starboard main deck. The fourth was solid (full length) water-tight door in the forward port side of the deck house, and opened outward from an athwartships passageway onto the main deck.

2. Eight port holes, four port and four starboard, were located in the main deck superstructure as follows; two in the fidley/upper engineroom, four in cabins, and two in the galley.

Fidley/Upper Engineroom Level

The fidley was the largest space in the superstructure, and somewhat bottle shaped. The overall length of the fidley was about 20 feet. The forward narrow (neck) portion of the fidley was 7 feet wide and 8 feet long, between the port and starboard inboard longitudinal bulkheads of the chief engineer's cabin, and the galley. The aft (barrel) portion of the fidley was 19 foot wide (between port and starboard exterior bulkheads), and 12 feet long, from the chief engineer's, and the galley's aft transverse bulkheads to the fidley aft bulkhead.

1. Flammable, perforated sound proofing fiber-board (about .25 in thick) sheathing covered the fidley's interior bulkheads and overhead. Fiberglass thermal insulation was installed between the sound-proof covering and the steel bulkheads and overhead in the fidley. The fiberglass insulation ran from the deck up, in the (3 inch deep, 18 inch wide, and 9 foot high), space between the vertical steel bulkhead frames, and across the overhead inside the fidley.

2. A water-tight dutch-door leading to the main deck, was located in the port side of the fidley's aft transverse bulkhead. Another steel watertight dutch-door was installed in the port longitudinal bulkhead, outboard of the fidley port side stairwell to the lower engineroom.

3. Two 16 inch diameter portholes were installed in the fidley's port and starboard bulkheads. The portholes were located about three feet aft of the (6 foot wide) aft transverse bulkheads of the galley, and the chief engineer's cabin, and each was outboard, respectively, of the port, and the starboard stairwells to the lower engineroom.

4. The fidley deck was constructed of steel grating[7] with rectangular openings. The deck grating extended outboard to the fidley's port and starboard bulkheads, and aft from the fidley/galley door to about five feet forward of the aft transverse bulkhead. The centerline area of the grating was about 8 inches above the 20 cylinder diesel main engine (insulated) exhaust manifold in the lower engineroom.

An Eklof port engineer said that the temperature of the fidley steel deck grating, while underway, was normally about 135°f. The exhaust piping was covered with sectional thermal insulation blankets. The temperature of the main engine exhaust manifold piping (under the insulation) while underway, was about 950°f.

The deck grating allowed the free movement of heated air, directly from the lower engineroom (where five diesel engines are located) upward through the fidley deck grating to the stack casing, where it was exhausted to the outside atmosphere by an electric fan.

The galley/fidley steel door was located in the center of the fidley's forward 7 foot wide transverse bulkhead, and opened from the galley into the fidley. Located to the port of the fidley/galley door was a semi-portable CO^2 firefighting system (hose reel and two 50 lb fixed cylinders). The system was installed in the fidley's forward port corner, against the port inboard longitudinal bulkhead. The system controls were located at the CO^2 cylinders.

1. Three wooden storage cabinets (containing diesel engine spare parts) were located forward, against the fidley's port and starboard inboard longitudinal bulkheads. One

[7] The steel grating was fabricated of flat steel bars (1.5 inches wide, 48 inches long, and 0.125 inch thick) connected in parallel vertical strips with 0.75 inch wide pieces of the flat bar at 2 inch intervals. This created rectangular deck openings 2 inches long, 0.75 inches wide, and 1.5 inches deep.

cabinet (about 3 feet high x 3 feet wide x 10 inches deep) was located longitudinally against the fidley's port inboard longitudinal bulkhead, under the hose reel and just aft of the two 50 pound CO2 cylinders.

2. The other two wooden cabinets were similar in size and located side by side against the fidley's starboard inboard longitudinal bulkhead. Three steel enclosed electrical lighting switch boxes (each 18 inches wide x 24 inches long x 4 inches deep) were installed on the starboard forward fidley bulkhead above the two wooden storage cabinets.

The tug's main electrical switchboard was installed transversely at the starboard aft fidley bulkhead. The switchboard was fitted with three air-circuit breakers with cable connections to the port and starboard ship service generators, and the emergency generator. Five steel panels (removable), and the single multiple breaker switch panel, comprised the switchboard front.

Three electrical transformers were located at the deck, side by side longitudinally along the starboard fidley bulkhead, just outboard of the starboard lower engineroom stairwell. Three rectifiers, located on the aft starboard bulkhead above the transformer

Located aft, against the fidley's extreme port side bulkhead (See photo #22), was a ship monitoring system. All that remained of the video monitor was a heat damaged metal frame. The two battery charger steel enclosures. Both of the sensor components steel cabinets. three 12 volt DC batteries was found during the damage examination.

There were seven light fixtures installed at the overhead of the fidley. Each fixture consisted of a glass (3 inch diameter x 6 inch depth) globe, that was protected by a screw on steel cage.

1. Two lighting fixtures were installed on the centerline overhead in the forward portion of the fidley. The forward light fixture was installed vertically about 3 feet aft of the fidley/galley door, and the next light fixture was installed horizontally and about 4 feet behind the first.

2. Port and starboard light fixtures were located in the overhead, each about 3 feet inboard of the port and starboard portholes aft of the chief engineer's and the galley's aft transverse bulkheads.

3. Three light fixtures in the fidley aft were installed transversely in the overhead, extending from starboard at the first location in front of the electrical switchboard, to the next above and behind the sloping (45°) main engine exhaust pipe line, and the third located in front of the vessel condition monitoring system.

The galley cooking area was located on the starboard side of the forward fidley opposite from the chief engineer's cabin, and similar in size. The galley's inboard longitudinal and aft transverse bulkheads were common with the starboard forward area of the fidley. The solid steel

deck plating in the galley and dinning area was also the overhead of the forward starboard and center portion of the lower engineroom.

1. An electric range/oven was located in the aft inboard corner of the galley, installed transversely against the galley's aft bulkhead. A range exhaust hood and ventilation ducting was located directly above the range.

2. All bulkhead and overhead sheathing was covered in flammable material (perforated sound proofing in the fidley, marinite in the galley/dining area, and varnished wood paneling), as were the dinning chairs and almost all other furnishings.

The chief engineer's cabin was located on the port forward side of the fidley. The inboard longitudinal and aft transverse bulkheads in the chief engineer's cabin are also the bulkheads in the port forward area of the engineroom fidley. The cabin's steel deck plating was also part of the lower engineroom port side overhead.

Accommodations for the two tankermen, and the dayman were located forward of an athwartship passageway and the galley/dining area. The crew accommodations were located port and starboard of centerline stairwells (up to the stack deck accommodation, and down to the dry stores compartment).

III. Stack Deck Accommodation House

The exterior bulkheads of the stack deck accommodation house was painted white. One solid full length water-tight door was located on the port side, and opened outward to the stack deck. An inflatable life raft was installed on the exterior starboard forward bulkhead at the stack deck level.

1. The cabins for the captain, and the chief mate were located on the stack deck, on the port and starboard sides of a center stairwell leading up to the wheelhouse.

2. An emergency battery-power room was located forward on the stack deck, directly below the wheelhouse,

3. Two, painted white, ventilation supply steel trunks, (each-5 feet long x 4 feet high x 2 feet deep) were located port and starboard at extreme aft outboard corners on the stack deck. Each air supply trunk was located directly above a fan plenum. Air-intake louvers were facing inboard on the stack deck, with no closing appliance attached.

The steel stack casing was painted tan, and the exterior bulkheads of the stack deck accommodation house were painted white. The aft (30%) portion of the stack casing contained the main engine air-intake compartment, The air intake compartment is separated from the engineroom below, and the rest of the stack casing by welded steel plating.

1. Port and starboard (3' x 2') vertical hatches opened outward on forward hinges permitting access into the main engine air-intake compartment. There was a (18" wide x 24" high), louvered opening into the air-intake compartment, located on the aft centerline of the stack steel casing near the top of the stack.

2. The stack was fitted with (4' x 4') port and starboard engine room ventilation exhaust louvered dampers. Each damper was fitted with a hinged steel door, and securing dogs.

A oval shaped (8 feet long x 4 feet wide x 3 feet deep) steel tub, used for containing heavy hause line, was installed transversely, just aft of the stack. A rectangular shaped (8 feet long x 3 feet wide x 2.5 feet deep) steel paint locker, (without cover) was installed longitudinally adjacent to the stack on the starboard side.

IV. Wheelhouse Deck and Wheelhouse

The wheelhouse was located on the wheelhouse deck, and contained the chart table (aft), and the operator's helm (forward). Controls for propulsion, steering, navigation, and communication were installed in front and behind the captain's chair at the helm. Full glass windows surrounded the entire wheelhouse, with a door located in the starboard aft transverse bulkhead, which opened onto the aft wheelhouse deck.

A hydraulically elevated pilothouse was installed on the port aft side of the wheelhouse deck, behind the wheelhouse.

Engineering and Structural Information: Vessel No. 2

The unmanned U.S. registered and inspected single hull oil tank barge, NORTH CAPE, was constructed of all welded steel. In the barge layout, there were 14 cargo tanks, seven-port and seven starboard of a centerline longitudinal division bulkhead. Eight transverse bulkheads, that were installed from the port to the starboard hull plating, created the fourteen cargo tanks.

The NORTH CAPE was constructed with a bow rake void compartment forward of the cargo tank block, and a stern void compartment aft of the cargo block. The U.S. Coast Guard conducts one annual tank barge inspection for certification.

There were no double bottoms or double sides. And the oil tankbarge was not fitted with either designated segregated ballast tanks or clean ballast tanks. And the company did not, and was not required to, use the hydrostatic-balance loading procedure. Cargo tank capacity follows:

2 forward tanks 1p/1s 75,600 gallons each	=	151,200
2 after tanks 7p/7s 71,400 gallons each	=	142,800
10 tanks 2p to 6s 390,600 gallons each	=	3,906,000

Total cargo tank capacity in gallons = 4,200, 000 (100,000 bbls)

The barge had two cargo pump houses located aft above cargo tanks 7p/s, and to the port and starboard of centerline. And one pump house was located forward, above 2 port/starboard cargo tanks and on the starboard side of centerline.

While unmanned barges are not required to be fitted with an anchor, one was located on the NORTH CAPE bow, rigged to an 'A' frame anchor sled. Anchors on unmanned, inspected barges are not tested, either by the U.S. Coast Guard or the American Bureau of Shipping. At times, the USCG inspects the anchor chain, and the size of the links, but the anchor and windlass are not operationally tested, not even for the issue and re-issuance of the annual Certificate Of Inspection (COI).

Anchor requirements, as found in 46 CFR 32.15, do not require an anchor on an unmanned barge. ABS does not require an anchor either. While the USCG requires a general inspection of tankbarge equipment, there is no requirement to examine anchor equipment if it is installed. And a routine event, during almost all USCG conducted underwater hull inspections, is the inspection of the anchor, chain, chain locker, and anchor handling equipment. However, there are no USCG requirements for an anchor examination, of unmanned barges of any sizes, at the 24-30 month drydocking inspection interval.

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